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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,342	12/28/2001	Fergus O'Brien	27795-00025	5883

23932 7590 02/22/2006

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EXAMINER	
STRANGE, AARON N	
ART UNIT	**PAPER NUMBER**
2153	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/030,342	O'BRIEN ET AL.	
	Examiner	Art Unit	
	Aaron Strange	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annapareddy et al. (US 5,602,839) in view of Watts et al. ("Collective dynamics of 'small-world' networks").

4. With regard to claim 1, Annapareddy discloses a system comprising:

a plurality of computing nodes (Col 5, Lines 45-47)(Fig 2, n1, n2, etc) interconnected to form a plurality of node clusters (groups),

wherein cross links are provided between said clusters (Col 5, Lines 53-59 and Fig 2). Annapareddy fails to specifically disclose selecting the cross-links such that the system comprises a small world network.

Watts discloses a small world network wherein cross-links (edges) are provided

between said node clusters (Fig 1); and wherein the cross links are selected such that the system comprises a small-world network (Col 1, ¶2-4 and Fig 1); and

wherein the small-world network comprises a substantially higher clustering coefficient of nodes in combination with a substantially lower characteristic path length between the nodes in comparison with a corresponding randomly-connected network (Col 1, ¶4 and Fig 2).

This would have been an advantageous modification to the system disclosed by Annapareddy since it would have significantly reduced the average path length, resulting in reduced latency and more efficient routing on the network, since the average number of hops required to reach a distant node would be decreased.

5. With regard to claim 2, Watts further discloses that the cross-links between the node clusters are selected at random (Col 1, ¶2).

6. With regard to claim 3, Annapareddy further discloses that the node clusters are fully interconnected (each node in a group connects to all others in the group) (Fig 2).

7. With regard to claims 4 and 5, while the system disclosed by Annapareddy in view of Watts shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the average path length between the nodes is less that 2.0, or, more specifically, between 1.5 and 1.7.

Watts teaches that adjusting parameters of a small-world network results in

changes in the characteristic path length. Adding a few cross-links results in a large drop in the path length (Fig 2), while substantially maintaining the clustering of the network. It would have merely been a matter of preference to a designer of the system to adjust the parameters of the network to obtain any desired mean connectivity, such one between 1.5 and 1.7.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the number of cross links to obtain a mean connectivity of 1.5-1.7 or any mean connectivity desired by the designer of the system, based on the intended goal of the system.

8. Claim 7 is rejected under the same rationale as claim 1, since they recite substantially identical subject matter. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Annapareddy et al. (US 5,602,839) in view of Watts et al. in further view of Brewer et al. (US 5,859,975).

10. With regard to claim 6, while the system disclosed by Annapareddy in view of Watts shows substantial features of the claimed invention (discussed regarding claim 1), it fails to disclose that each node has a plurality of interconnected processors.

Brewer discloses that the use of multiple processors in a single node of a distributed system is well-known in the art (Col 1, Lines 26-31). The use of multiple processors in a single node allows that node to process more information than it would be capable with only a single processor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a plurality of interconnected processors in each node since it would have allowed the nodes to process more information that they would be capable of processing with only a single processor.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 571-272-3959. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS
2/15/2006

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